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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/603,994	06/25/2003	Timothy J. Olson	0543.001	4765
34282	7590	11/16/2004	EXAMINER	
QUARLES & BRADY STREICH LANG, LLP ONE SOUTH CHURCH AVENUE SUITE 1700 TUCSON, AZ 85701-1621			RODRIGUEZ, JOSEPH C	
		ART UNIT	PAPER NUMBER	
		3653		

DATE MAILED: 11/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.	OLSON ET AL.
Examiner	Art Unit Joseph C Rodriguez 3653

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

**A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.**

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on _____.
2a) This action is FINAL. 2b) This action is non-final.
3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-13 is/are pending in the application.
4a) Of the above claim(s) ____ is/are withdrawn from consideration.
5) Claim(s) ____ is/are allowed.
6) Claim(s) 1-13 is/are rejected.
7) Claim(s) ____ is/are objected to.
8) Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.
10) The drawing(s) filed on 25 June 2003 is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892)
2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 6/25/03.

4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) Notice of Informal Patent Application (PTO-152)
6) Other: _____.

DETAILED ACTION

Specification

Claim Objections

The claims are objected to as the form of claims 1-13 is improper. Where a claim sets forth a plurality of elements or steps, as in the instant claims, each element or step should be separated by a line indentation. See MPEP 608.01(m) and 37 CFR 1.75(i).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-6, 10-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brown (US 3,358,938) in view of Wilson (US 3,145,935), Hayatdavoudi (US 4,670,161) and Eryurek et al. ("Eryurek") (US 6,601,005).

Brown teaches the use of a vibration sensor (i.e., sound control system) in a hydrocyclone (i.e., wet cyclone) to "control the diameter of the apex opening, the density of the cyclone feed or the pressure of the cyclone feed, and thus vary the point at which the size separation is made" (col. 2, ln. 28-35; col. 5, ln. 21-72), wherein the sensor (25, 18) produces a signal relative to a reference signal (i.e., baseline threshold) to indicate an error. Further, Applicant is respectfully reminded that claim language consisting of

functional language and/or intended use phrasing is given little, if any, patentable weight as the apparatus must merely be capable of functioning, or being used, as claimed.

See MPEP 2112.02, 2114. Here, the combination taught below of a sensor mounted on the splash skirt is certainly capable of detecting a change in discharge *indicative* of roping or of a condition of the underflow discharge.

Brown as set forth above thus teaches all that is claimed except for expressly teaching substituting said sensor with an ultrasonic sensor enclosed within a housing and mounted on the splash skirt. This feature, however, is well known in the cyclone arts. For instance, Wilson teaches a flow meter sensor (28) mounted directly on the splash skirt (Fig.). Moreover, Wilson teaches that the placement of the sensor here is superior to the sensor placement associated with monitoring the general noise level of the mill as taught by Brown (col. 1, ln. 23-47). Hayatdavoudi also expressly teaches placing sensors on the splash skirt to assist for better monitoring, and thus control, of the operation of the cyclone (col. 7, ln. 35-47). Further, Eryurek teaches that there are various well known equivalents to the pressure sensors taught above that use ultrasonic sensors to monitor fluid flow within a cyclone and also teaches mounting said sensors directly in the fluid flow tube (col. 1, ln. 15-27; col. 7, ln. 33-col. 8, ln. 22 with fig. 8 teaching sensor 266 mounted in a housing for common sense benefit of protective shielding). Moreover, the sensor taught by Eryurek eliminates the need for the additional sensor and components needed by prior art fluid flow sensor devices such as the Brown device (col. 1, ln. 40-47). Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the

invention of Brown as taught above to simplify the sensing mechanism for the hydrocyclone fluid flow.

Claims 1, 2, 4, 5, 7, 8, 10 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wright et al. ("Wright") (US 2,648,433) in view of Hayatdavoudi (US 4,670,161) and Eryurek et al. ("Eryurek") (US 6,601,005).

Wright teaches a method and device (Fig. 2) for detecting roping conditions in a hydrocyclone comprising a hydrocyclone (1) and a pressure sensor (11), wherein said sensor is used to detect possible roping conditions (col. 1, ln. 49-col. 4, ln. 16).

Wright as set forth above thus teaches all that is claimed except for expressly teaching modifying the invention with an ultrasonic sensor enclosed within a housing and mounted on the splash skirt. This feature, however, is well known in the cyclone arts. For instance, Hayatdavoudi expressly teaches that in addition to sensing pressure at an input conduit as in Wright additional pressure sensors can be placed on the splash skirt to assist in monitoring the operation of the cyclone (col. 7, ln. 35-47). Further, Eryurek teaches that there are various well known equivalents to the pressure sensor taught by Wright that use ultrasonic sensors to monitor fluid flow within a cyclone and also teaches mounting said sensors directly in the fluid flow tube (col. 1, ln. 15-27; col. 7, ln. 33-col. 8, ln. 22 with fig. 8 teaches sensor 266 mounted in a housing for common sense benefit of protective shielding). Moreover, the sensor taught by Eryurek eliminates the need for the additional sensor and components needed by prior art fluid flow sensor devices (col. 1, ln. 40-47). Therefore, it would have been obvious at the

time the invention was made to a person having ordinary skill in the art to modify the invention of Brown as taught above to simplify the sensing mechanism for the hydrocyclone fluid flow.

Claims 3, 6, 9, 11 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wright in view of Hayatdavoudi and Eryurek as applied to claims 1, 2, 4, 5, 7, 8, 10 and 12 above, and further in view of Brown (US 3,358,938).

Wright in view of Hayatdavoudi and Eryurek as set forth above teach all that is claimed except for expressly teaching using said sensor to produce an output signal relative to a baseline threshold which is indicative of a condition of the underflow discharge. Brown, however, teaches the comparison of the sensor signals relative to an empirical standard size or set point that are indicative of a particle size of the underflow discharge of a hydrocyclone (col. 4, ln. 20-col. 5, ln. 72). Moreover, the use of a baseline threshold or set point allows the operator greater flexibility in controlling the cyclone (Id.). Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the invention of Wright in view of Hayatdavoudi and Eryurek as taught above for greater control over the cyclone's operation.

Conclusion

Any references not explicitly discussed above but made of record are considered relevant to the prosecution of the instant application.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph C Rodriguez whose telephone number is **703-308-8342**. The examiner can normally be reached on M-F during normal business hours (9 am – 6 pm, EST).

The **Official** fax phone number for the organization where this application or proceeding is assigned is **703-872-9326** (After-Final **703-972-9327**).

The **UnOfficial** fax phone number for the organization where this application or proceeding is assigned is **703-306-2571 or 703-308-6552**.

The examiner's **UNOFFICIAL Personal fax number** is **703-746-3678**.

Further, information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system.

Status information for published applications may be obtained from either Private PMR or Public PAIR. Status information for unpublished applications is available through Private PMR only.

For more information about the PAIR system, see

<http://pair-direct.uspto.gov>

Should you have questions on access to the Private PMR system, contact the Electronic Business Center (EBC) at 866-217-9197 (Toll Free).

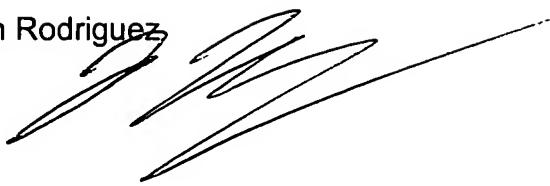
Alternatively, inquiries of a general nature or relating to the status of this application or proceeding can also be directed to the **Receptionist** whose telephone number is **703-308-1113**.

Art Unit: 3653

Signed by Examiner Joseph Rodriguez

jcr

November 8, 2004

A handwritten signature in black ink, appearing to read "Joseph Rodriguez", is written over a diagonal line. The signature is fluid and cursive.